

IN THE CLAIMS:

1. (Currently Amended) A scribing device for a brittle material substrate, which continuously heats a region along a line to be scribed on a surface of the brittle material substrate at a temperature lower than a softening point of the brittle material substrate and, also, continuously cools a region in the vicinity of the heated region, thereby forming a blind crack along said line to be scribed, ~~[[said]]~~ the device characterized by comprising:

a light source;

a polarizing beam splitter ~~which splits~~ splitting light from the light source ~~depending based on a polarization state,~~ said polarizing beam splitter transmitting the split light in a specific polarization direction;

an optical fiber ~~which is~~ arranged such that light ~~in a specific polarization direction~~ ~~having~~ transmitted through said polarizing beam splitter enters the region of the blind crack formation in the vicinity of the cooled region on the surface of said brittle material substrate and the light reflected by the blind crack is returned to said polarizing beam splitter;

a light reception element ~~which receives~~ receiving the light split by said polarizing beam splitter ~~from the~~ reflected light from said blind crack via said polarizing beam splitter; and

a determination unit ~~which provides~~ including a window comparator, said determination unit with said window comparator determining so as to distinguish whether a level of light receiving signal obtained from said light reception element is between predetermined thresholds ~~or not,~~ wherein a shape state of the blind crack is ~~checked~~ determined based on an output from said determination ~~[[part]]~~ unit.

2 - 8. (Canceled)

9. (Currently Amended) A scribing method for a brittle material substrate, in which a region along a line to be scribed on a surface of a brittle material substrate is continuously heated at a temperature lower than a softening point of the brittle material substrate and, also, a region in the vicinity of the heated region is continuously cooled, so that a blind crack is formed along said line to be scribed, ~~[[said]]~~ the method characterized by comprising:

splitting light from a light source with ~~the use~~ a polarizing beam splitter ~~depending based~~ on a polarization state;

allowing light in a specific polarization direction, having transmitted through said polarizing beam splitter, to enter, ~~through an optical fiber~~, the region of the blind crack formation in the vicinity of the cooled region on the surface of said brittle material substrate via an optical fiber;

returning the light reflected by the blind crack to said polarizing beam splitter ~~through~~ via said optical fiber;

receiving, ~~with a light reception element~~, the light split by said polarizing beam splitter from the reflected light from the blind crack with a light reception element; and

~~distinguishing~~ determining whether a level of light receiving signal obtained from said light reception element is between predetermined thresholds ~~or not, thereby performing~~ whereby the brittle material substrate is scribed ~~scribing while checking~~ determining a condition

of the blind crack formation of the brittle material substrate.

10 - 14. (Canceled)

15. (Currently Amended) An automated breaking line system for a brittle material substrate, ~~characterized by the automated breaking line system~~ comprising:

~~at least one scribing device for a brittle material substrate according to claim 1; and~~

~~at least one a device for breaking the brittle material substrate; and~~

5        a scribing device for scribing a brittle material substrate, said scribing device continuously heating a region along a line to be scribed on a surface of the brittle material substrate at a temperature lower than a softening point of the brittle material substrate and continuously cooling a region in the vicinity of the heated region such that a blind crack along said line to be scribed is formed, said scribing device including:

10                a light source for emitting light;

a polarizing beam splitter splitting light from said light source based on a polarization state, said polarizing beam splitter transmitting light in a polarization direction;

an optical fiber receiving light split via said polarizing beam splitter, said optical fiber guiding said light split via said polarizing beam splitter such that light enters the region of  
15        the blind crack formation in an area of the cooled region on the surface of the brittle material substrate, said optical fiber receiving the light reflected by the blind crack such that said optical fiber transmits said light to said polarizing beam splitter;

a light reception element receiving reflected light from said blind crack via said polarizing beam splitter; and

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a determination unit including a window comparator to determine whether an amount of light received via said light reception element is within predetermined thresholds, wherein a formation state of the blind crack is determined based on an output from said determination unit.

16. (Canceled)

17. (New) A scribing device in accordance with claim 1, wherein said shape state of the blind crack is continuously determined based on said output from said determination part when the brittle substrate material is scribed.

18. (New) A scribing device in accordance with claim 1, wherein the brittle substrate material is not scribed when said level of light receiving signal obtained from said light reception element is not within said predetermined thresholds.

19. (New) A scribing method in accordance with claim 9, wherein said condition of the blind crack formation of the brittle material substrate is continuously determined.

20. (New) A scribing method in accordance with claim 9, wherein the brittle substrate

material is not scribed when said level of light receiving signal obtained from said light reception element is not within predetermined thresholds.

21. (New) An automated breaking line system in accordance with claim 15, wherein said shape state of the blind crack is continuously determined based on said output from said determination part when the brittle substrate material is scribed.

22. (New) An automated breaking line system in accordance with claim 15, wherein the brittle substrate material is not scribed when said level of light receiving signal obtained from said light reception element is not within predetermined thresholds.